Curriculum

I Foundation Programme	12 Credits	⌃

Democracy and Justice
Environment and Climate Change
Neighbourhoods
Water

The studios deliver interdisciplinary learning around six domains:
Data Science, Communication, Behaviour, Constitution & Civilisation, Materials, and Biology & Life.

II General Education Requirement	30 Credits	⌃

Humanities and Languages GER

Social Sciences GER

Biological and Life Sciences GER

Performance and Visual Arts GER

GER Elective I: Communication I

GER Elective II: Communication II

GER Elective III: Introductory Calculus

GER Elective IV: Any course at the university outside the major

GER Elective V: Any course at the university outside the major

III Major Requirements	60 Credits	

Major Requirements	Credits
Major Core	*33*
Fundamentals of Computer Programming	
Programming Lab	
Discrete Mathematics	
Design and Analysis of Data Structures and Algorithms	
Computer Organisation	
Computer Organisation Lab	
Operating Systems	
Theory of Computing	
Probability and Stochastic Processes	
Applied Linear Algebra	
Introduction to Artificial Intelligence	
Computer Networks	
Internship	*Required*
Undergraduate Thesis or Capstone Project	*6*
Major Electives	*21*
Basic Bioinformatics	
Computational Structural Biology	
Formal Logic	
Natural Language Processing	
Parallel Programming using GPUs	
Sequence Analysis Algorithms	
Design and Analysis of Algorithms	
Software Engineering	
Algorithms and Optimisation for Big Data	
Probabilistic Graphical Models	
Python Programming	
Human Computer Interaction	
Data Analytics and Visualisation	
Big Data Analytics	
Machine Learning	
Parallel and Distributed Systems	
Advanced Computer Arithmetic: Algorithms and Sub-systems	
Social Network Analysis	
Cloud Computing	
Computer Vision	
Wireless Communications	
Information and Coding Theory	
VLSI Design	
High-Performance Computing	
Internet of Things	
Mobile Robots	
Linear Algebra	
Applied Linear Algebra	
Numerical Methods	
Introduction to Quantum Computing	
Advanced Statistics	
Classical Mechanics-I	
Mathematical Statistics	
Bayesian Data Analysis	
Population Genetics	
Stochastic Processes	
Artificial Intelligence	
Object Oriented Programming Lab	

IV   Free Electives   18 Credits

Free Electives provide flexibility to students to customise their education at the University.

1. Free Electives allow you to take additional courses as per your choice (apart from the Foundation Programme, GERs and Major Requirements), upto 18 credits, across the university to increase your depth or breadth.
2. A student can take a Minor in any area designated as a Minor at any School or Centre of the University. Some Minors may have specific pre-requisites. Free Electives can also be used along with some courses from the Major Requirements and GERs towards a Minor.

V   Volunteerism   Required

All students will complete 30 hours of engagement with society to develop a sense of engagement, concern, build problem solving skills, and understand the role of an engaged member of a society. This will be done through a mandatory course, *Engagement with Society*, that would be a graduation requirement. This course can be taken anytime during the stay at the University but it is advised that the student engage with the courses during the first two years at the University. The 30 hours of volunteer work may be completed during one semester or during the Winter or Summer Break.